

WDFW Monitoring and Management of Fish in the East Fork Lewis River

Tom Wadsworth
WDFW Region 5
District Fish Biologist



Salmonid Populations in the East Fork (EF) Lewis River and ESA Status

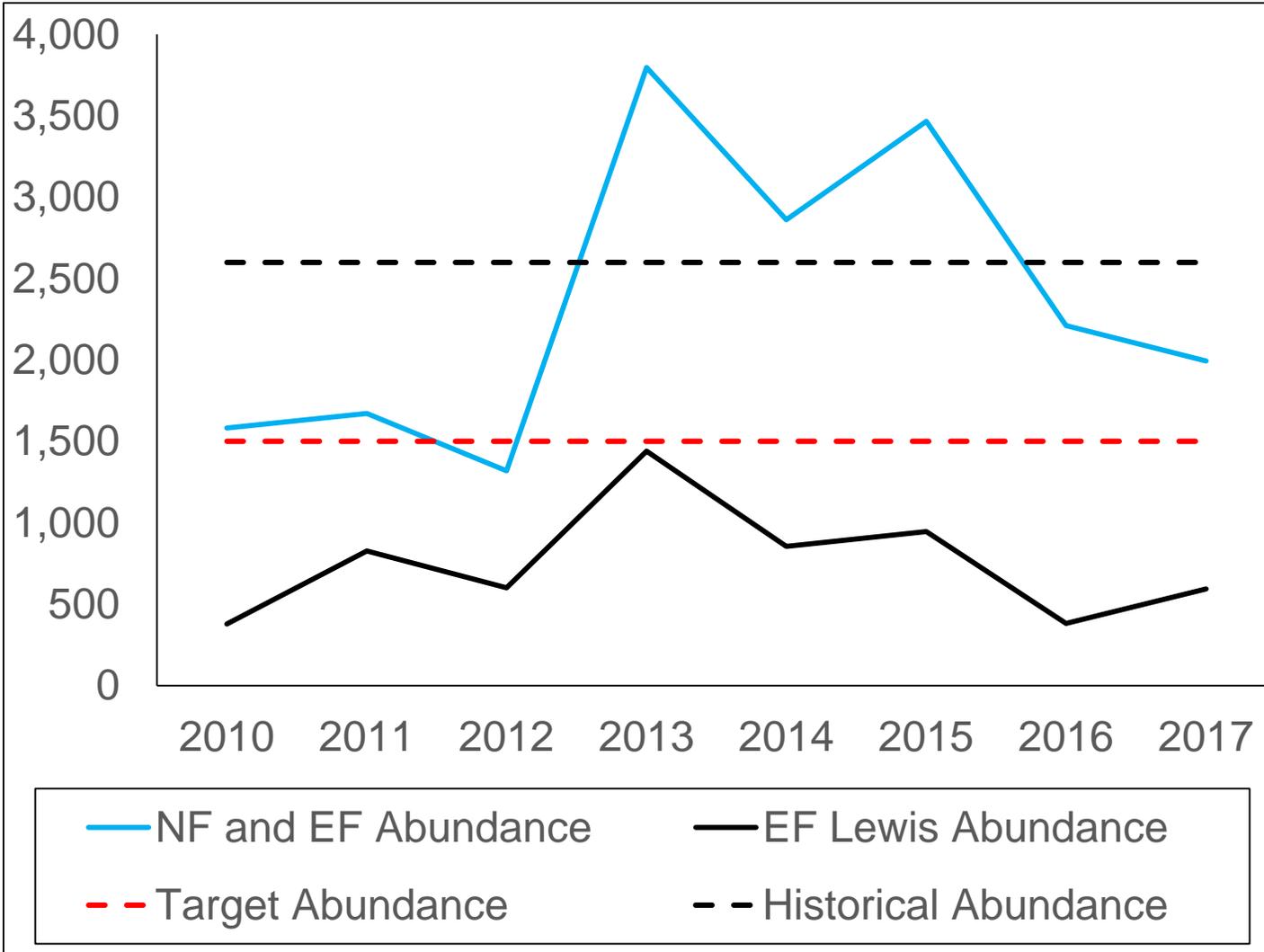
- Chinook (fall run) – Lower Columbia evolutionarily significant unit (ESU), listed in 1999 as ‘threatened’ in Endangered Species Act (ESA)
- Coho – Lower Columbia ESU listed in 2005 as ‘threatened’ in ESA
- Chum (fall) – Lower Columbia ESU listed in 1999 as ‘threatened’ in ESA
- Steelhead (summer and winter runs) – Lower Columbia distinct population segment listed in 1998 as ‘threatened’ in ESA
- Rainbow trout – contribute genetics to steelhead populations
- Cutthroat trout – not ESA listed, include anadromous life history
- Other native and non-native fish species – not ESA listed

WDFW Region 5 Salmonid Monitoring Strategy

- Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan - Lower Columbia Fish Recovery Board (2010)
 - Defines priority populations for recovery of listed ESUs (Primary, Contributing, Stabilizing)
 - Sets targets for recovery
 - Helps guide monitoring priorities
- Conduct annual monitoring of adult and juveniles to track recovery of ESA listed ESUs, hatchery-origin spawners, etc.
- EF Lewis River – spawning ground surveys, no recent juvenile monitoring

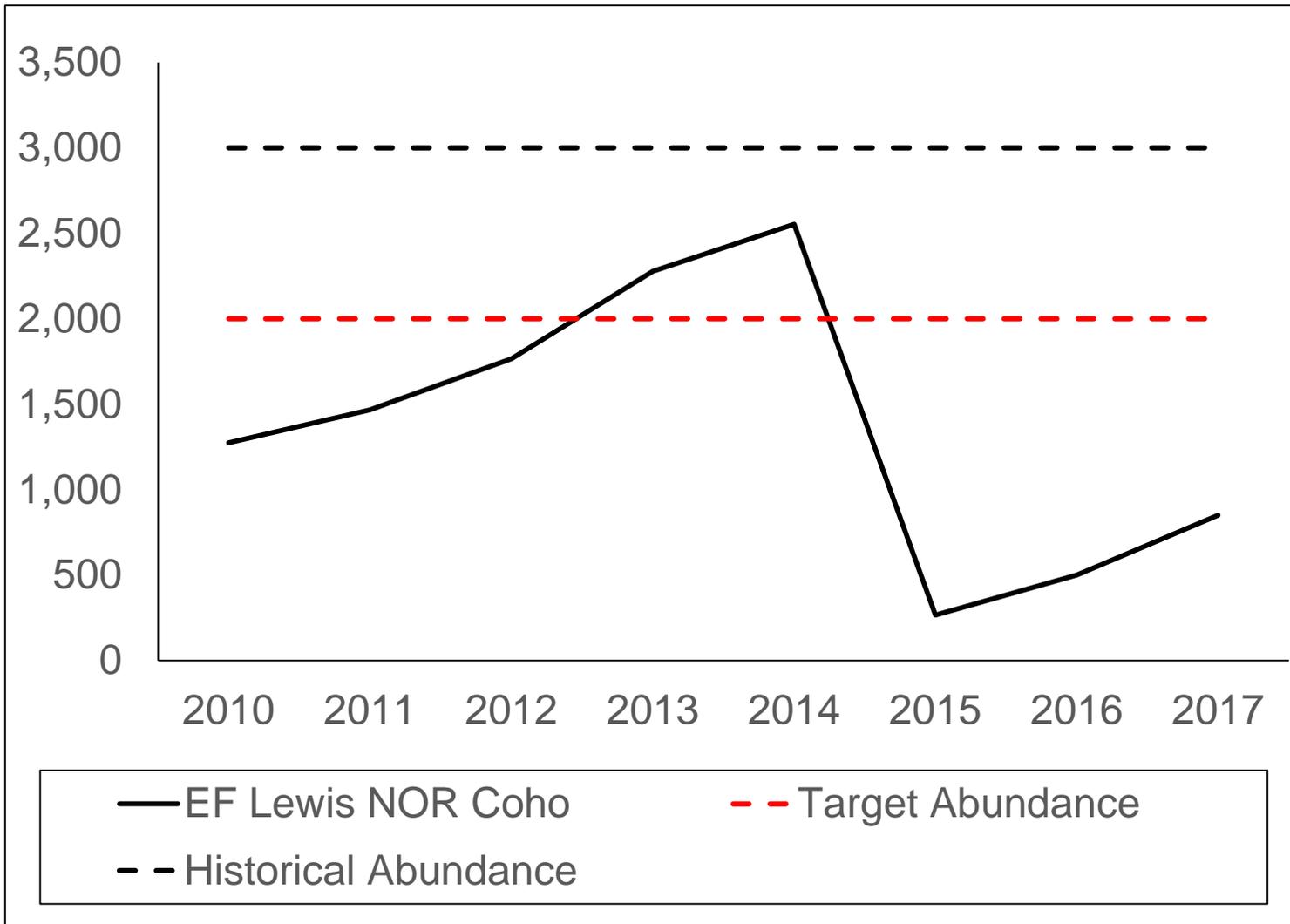


Salmonid population trends in EF Lewis Fall Chinook



- Primary recovery population
- Tule Chinook population includes NF and EF Lewis
- Natural-origin abundance above target recovery goal in recent years (LCFRB 2010)
- EF Lewis component of population is fairly large
- Return late-summer when river is warm/low

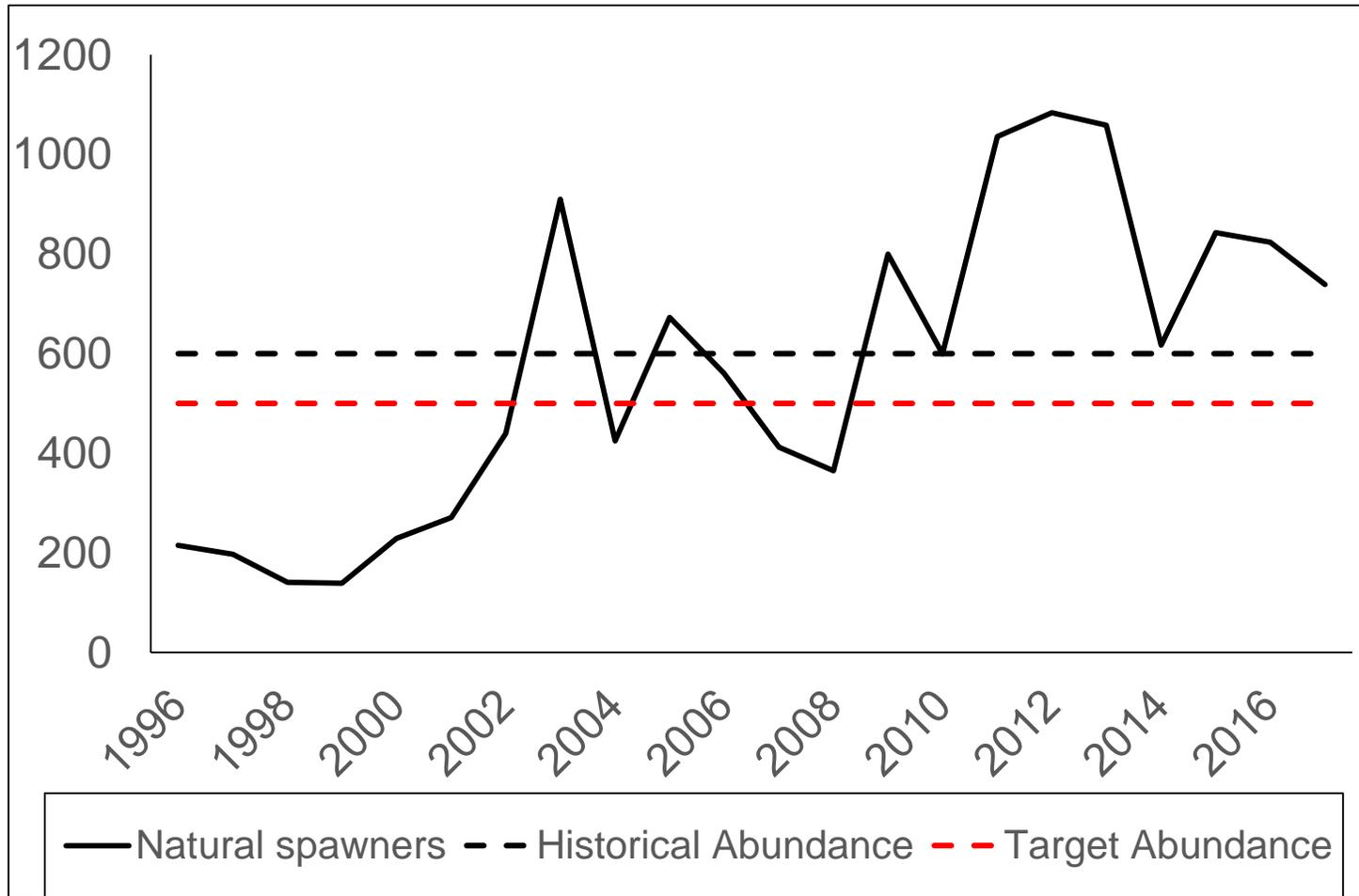
Salmonid population trends in EF Lewis Coho



- Primary recovery population
- Trend unclear but relatively low recently
- Below target recovery goal in most years (LCFRB 2010)

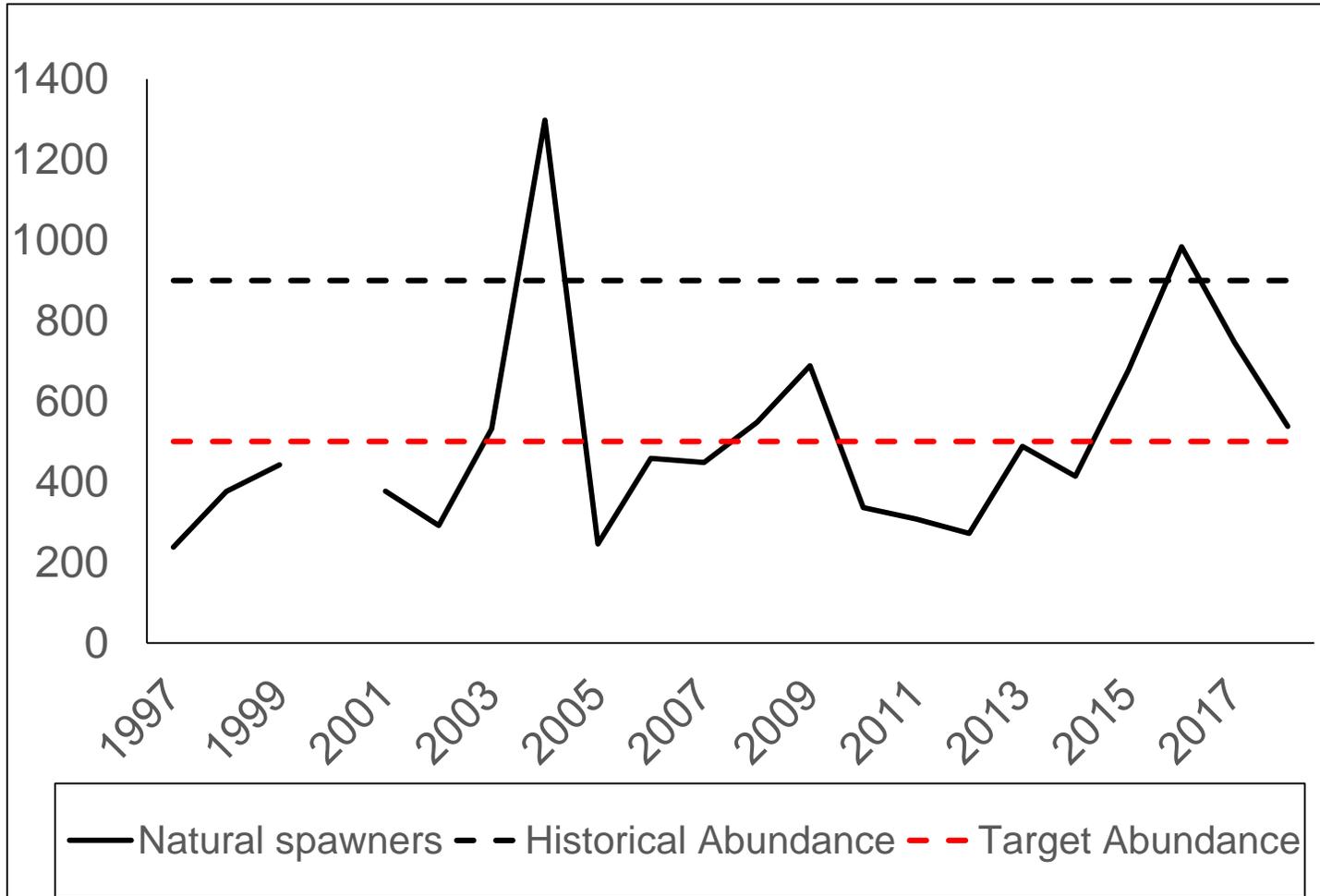


Salmonid population trends in EF Lewis Summer steelhead



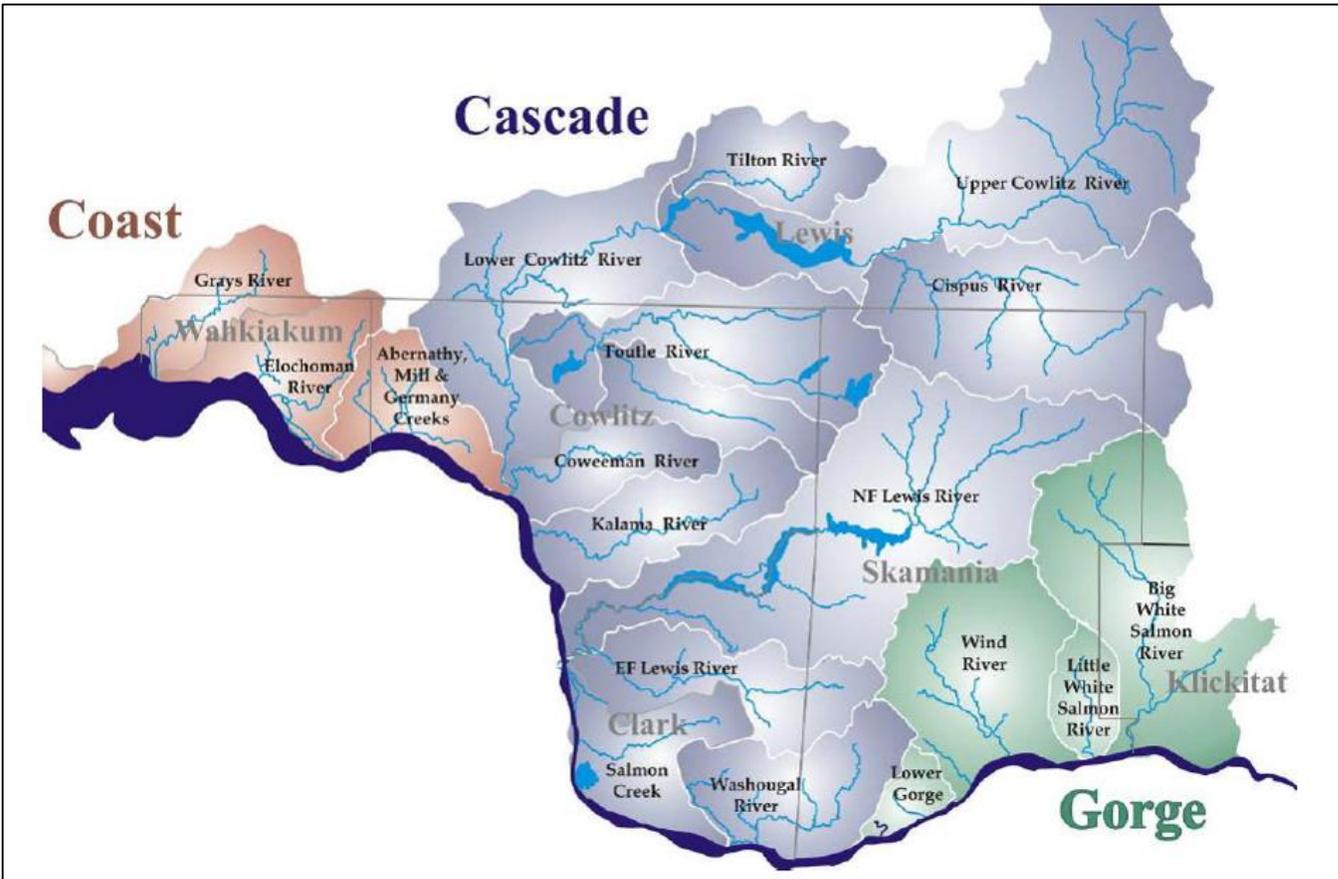
- Primary recovery population
- Increasing population trend
- Above target recovery goal in most years (LCFRB 2010)
- Catch-and-release fishery, harvest of hatchery strays
- Return in summer months when river can be low/warm

Salmonid population trends in EF Lewis Winter steelhead



- Primary recovery population
- Stable or increasing population trend
- Recent years above target recovery goal (LCFRB 2010)
- Catch-and-release fishery, harvest of hatchery strays

EF Lewis Wild Steelhead Gene Bank



Boundaries of Lower Columbia River Major Population Groups

- Statewide Steelhead Management Plan requires gene banks in each Major Population Group (MPG)
- EF Lewis in Cascade MPG
- One of two wild steelhead gene banks established for the Cascade MPG in 2014
- Chosen with assistance from a steelhead workgroup
- With designation, hatchery steelhead cannot be released
- Regulations structured to protect wild steelhead

Salmonid population trends in EF Lewis Fall Chum

- Population monitoring has been difficult due to low population size
- Lewis River population (EF Lewis and NF Lewis)
 - Historical abundance: 125,000
 - Current: unknown (likely <100)
 - Target: 1,300



Photo: Chum salmon by Tony Overman (The Olympian)

Freshwater Temperatures and Salmonids

- Migration can be impaired by maximum stream temperatures above 18-20°C (64-68°F)*
- Adult mortalities can occur starting at 16°C (60°F), increased chance of mortality above 24-25°C (75-77°F)*
- Spawning success can be impaired by maximum temperatures above 14-16°C (57-60°F)*
- Eggs require daily maximum temperature below 13-15°C (55-59°F) to ensure survival success*
- Salmon will look for refugia to avoid warmer waters, hard to find in some areas, especially at low flows

*WA DOE. 2002. Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards - Temperature Criteria

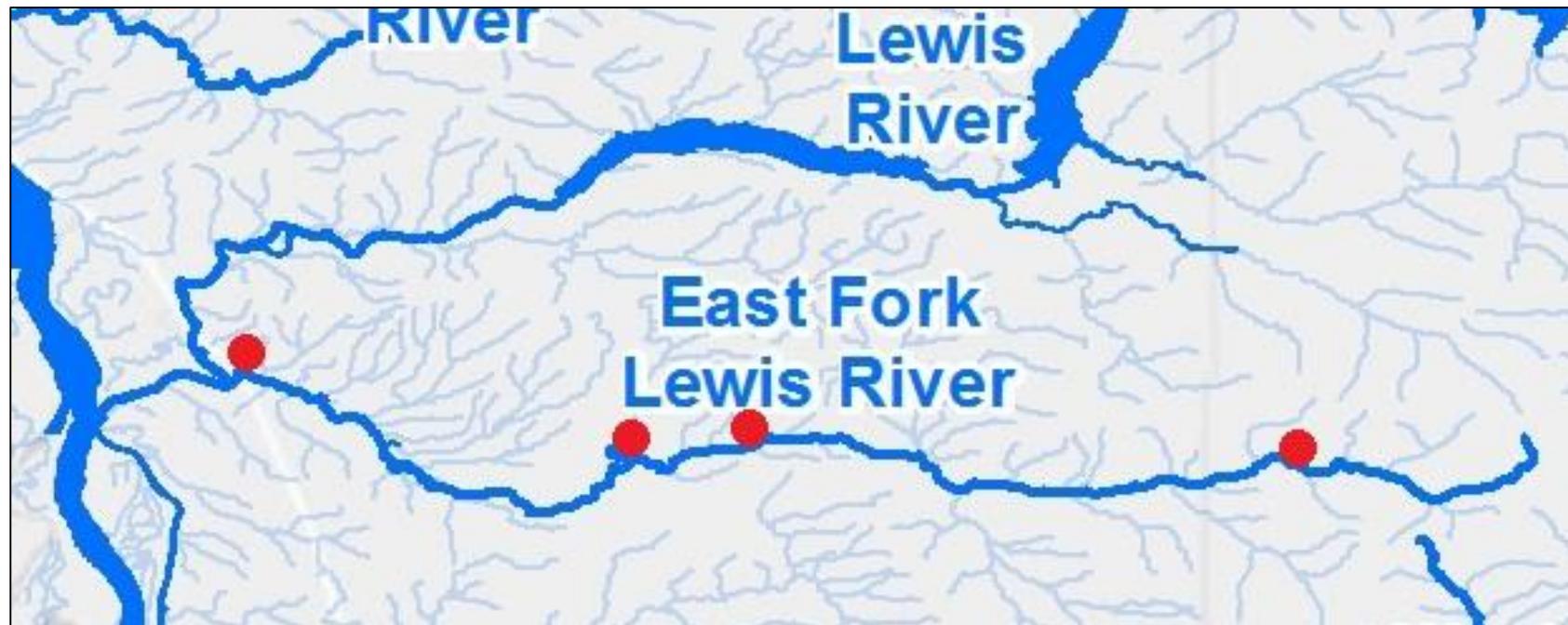
WDFW Temperature Monitoring in SW Washington

- In 2015, summer drought conditions raised concerns for fish
- Thousands of sockeye salmon died in Columbia River – likely due to temperatures well above 70°F
- Stream flows very low throughout SW WA
- Began actively monitoring stream temperatures to guide fishing regulations and better understand conditions
 - Used online data from DOE and USGS stations
 - Deployed dozens of small HOBO data loggers
- 2015 summer monitoring showed warm, cool areas in region

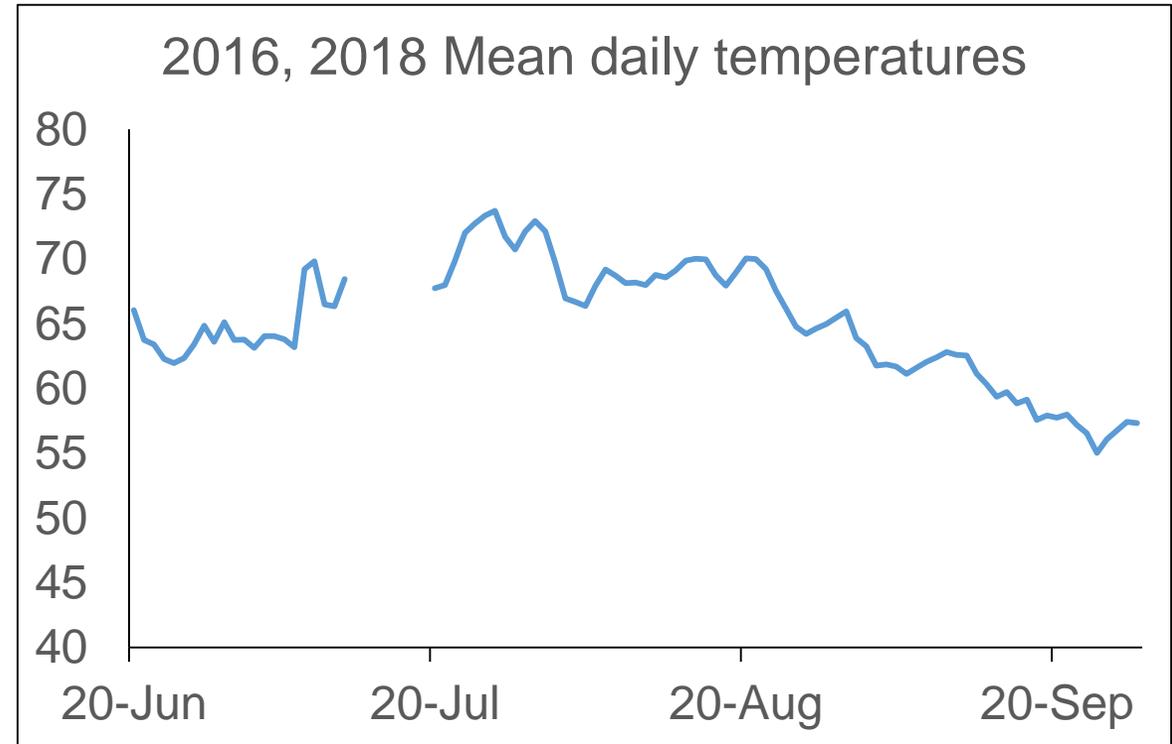
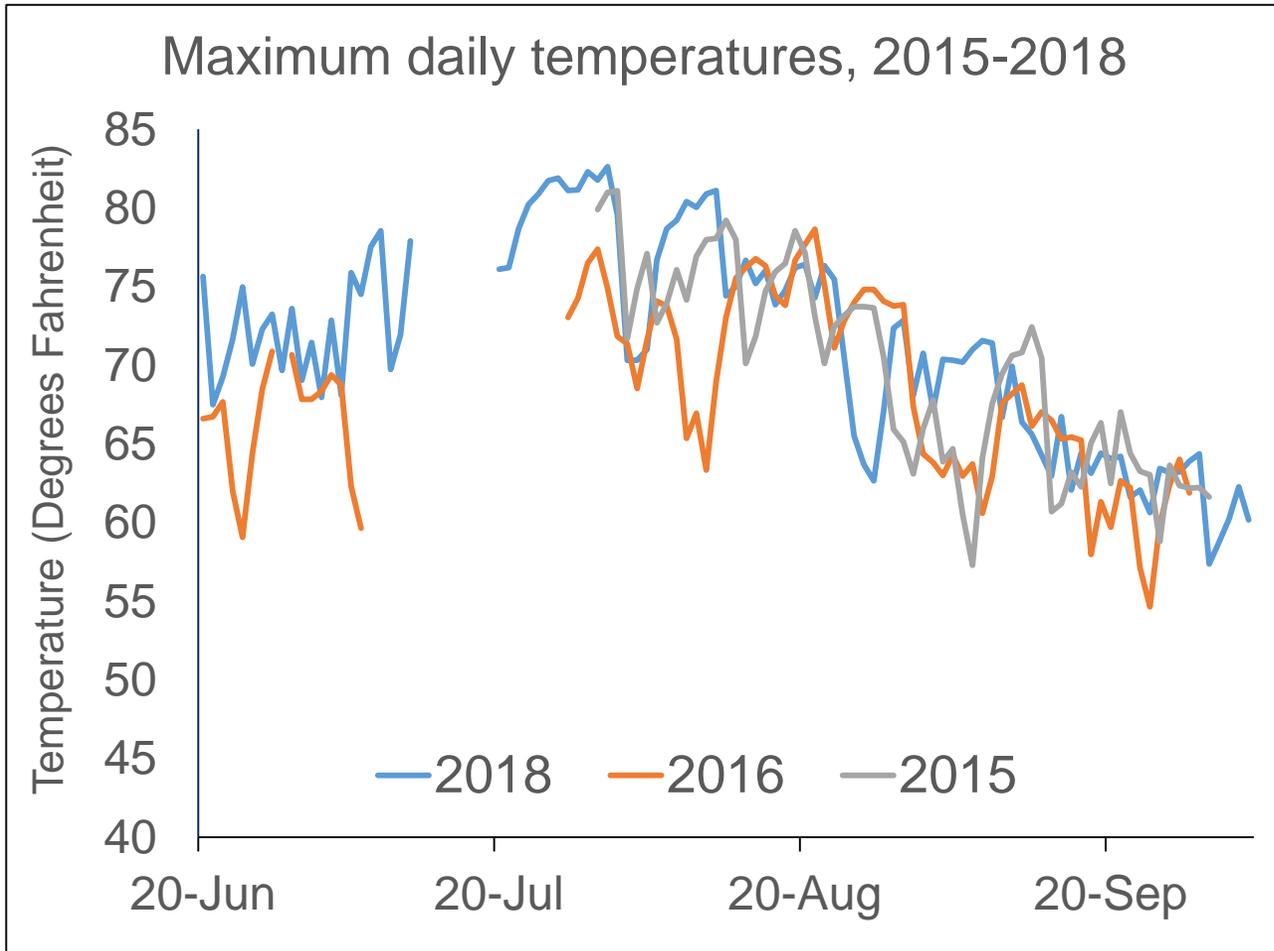


EF Lewis River Water Temperature Monitoring

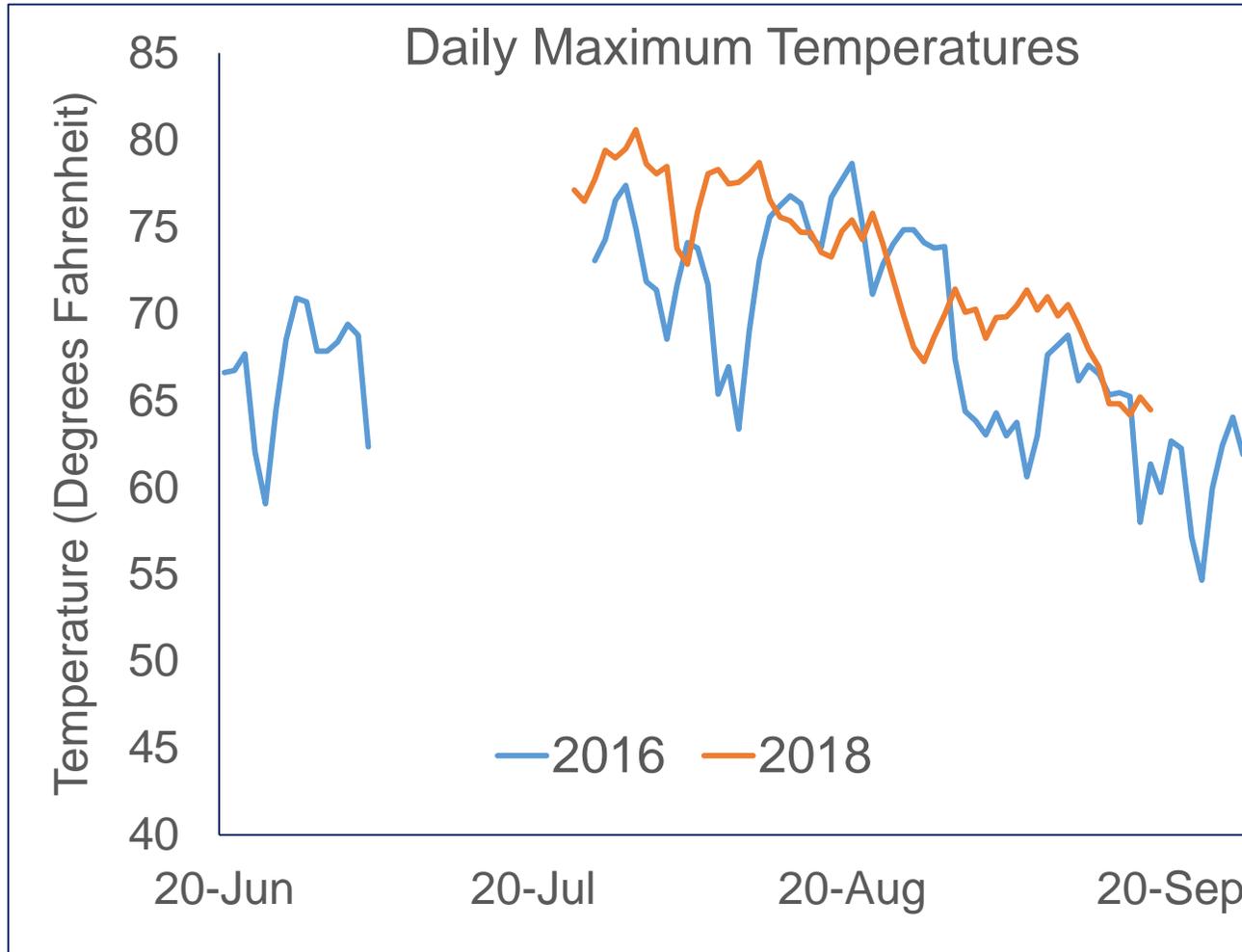
- LCFRB (2010) Limiting Factors analysis showed temperature as a primary or secondary factor for fall Chinook and steelhead in EF Lewis
- Three sites in 2015: Lewisville Park, Heisson Bridge, above Sunset Falls
- Two sites in 2016 and 2018: above Lewisville Park, near confluence with NF Lewis River



Water Temperatures Near Lewisville Park 2015, 2016, 2018

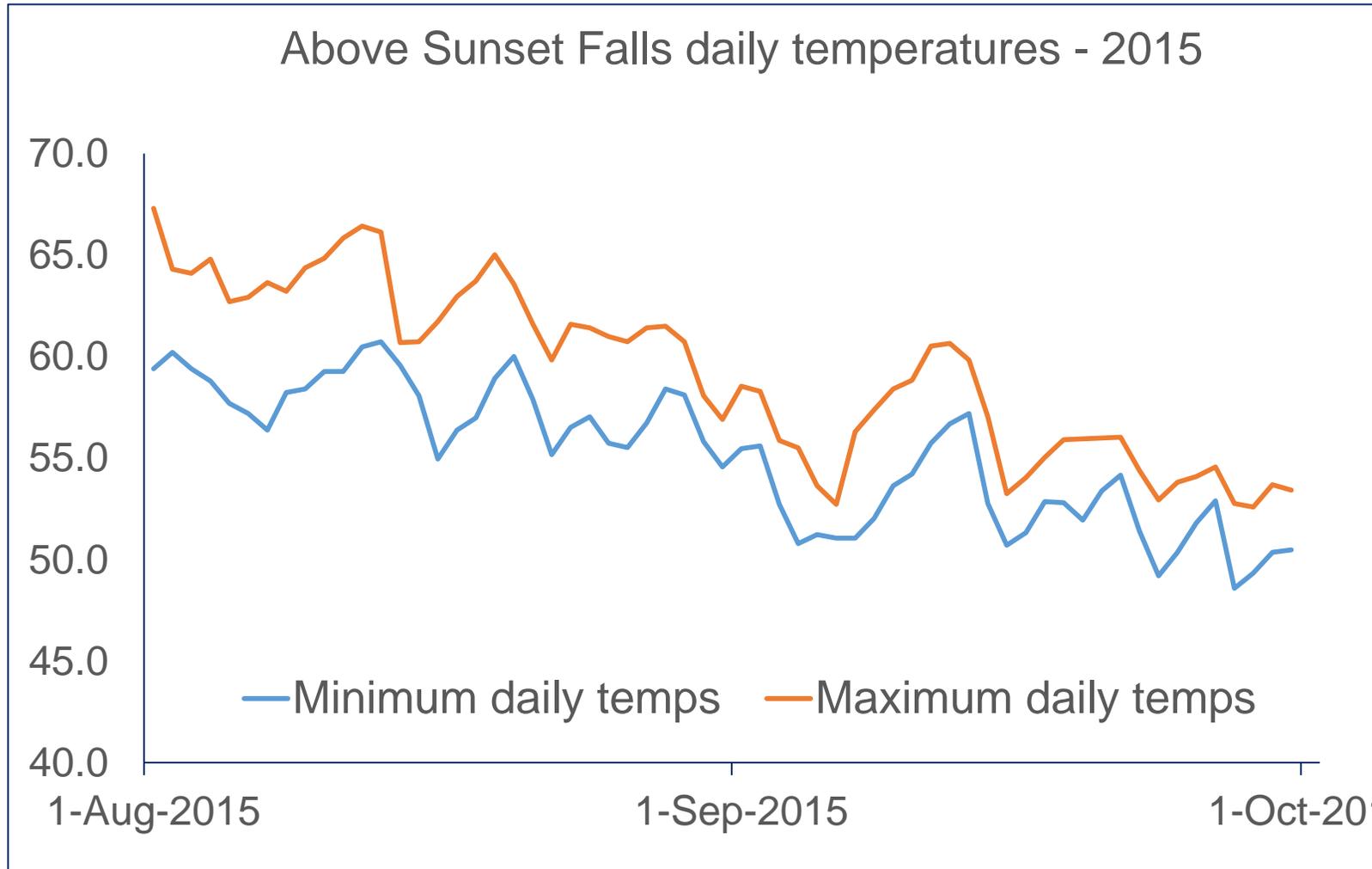


Temperatures Near Confluence with NF Lewis River 2016 and 2018



- Tidally influenced area made for high variability within days
- Overall pattern similar to Lewisville Park area

Temperatures Above Sunset Falls 2015



- Temperatures were cooler in August than lower river
- Fishing not allowed in this area all year

Recent Changes to EF Lewis Sport Fishing Regulations

- 2015 summer regulations due to warm/low water
 - From mouth to top boat ramp at Lewisville Park: Closed
 - From top boat ramp at Lewisville Park upstream Horseshoe Falls: Closed from 2 PM to one hour before official sunrise ('hoot owl' closure)
- 2018 changes - WDFW/public review of fishing regulations statewide
 - Closed to fishing July 16 and Sept. 15 due to warm/low water conditions
 - Trout: release cutthroat trout and wild rainbow trout, can harvest 2 hatchery rainbows/steelhead (remove hatchery fish to benefit wild fish)
 - Salmon: Sept. 16 – Dec 31, daily limit 2 adult hatchery Chinook or Coho
 - Maintain fishing closure from 400 feet below Horseshoe Falls upriver